Ministry for Primary Industries
Manatū Ahu Matua

**Minutes of the 2015 Agricultural Greenhouse Gas Inventory Advisory Panel Meeting**

**1 December 2015**

**10.15am – 2.25pm**

**Room 10.5, Pastoral House, Wellington**

Attendees:

The Agricultural Greenhouse Gas Inventory Advisory Panel ('the Panel') comprises:

**Dr Gerald Rys –** Principal Science Adviser, MPI – Chair

**Dr Harry Clark** – Director, New Zealand Agricultural Greenhouse Gas Research Centre, (NZMethanet)

**Dr Andy Reisinger** – Deputy Director, New Zealand Agricultural Greenhouse Gas Research Centre (also for The Royal Society of New Zealand)

**Dr Keith Lassey** - Lassey Research and Education Ltd, (NZMethanet)

**Prof Frank Kelliher** – AgResearch (NZN2Onet)

**Dr Andrea Brandon** - Senior Analyst, MfE

In Attendance:

**Peter Ettema** – Manager International Environment, MPI

**Mike Rollo** - AgResearch

**Dr James (Jim) Fick** – Resource Information & Analysis, MPI

**Alice Ryan** - Resource Information & Analysis, MPI

**Joel Gibbs** - Resource Information & Analysis, MPI

**Andrea Kapoutsos** – Resource Policy, MPI - Minute taker

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The purpose of the meeting was for Panel members to discuss and consider approving a proposed change to the Agricultural Greenhouse Gas (GHG) Inventory. Changes that the Panel considers are scientifically robust enough to implement, are recommended to the Deputy Director-General, Policy & Trade.

**Opening and Introduction**

Alice Ryan and Joel Gibbs introduced themselves.

The Chair outlined the agenda for the meeting.

**Review of the 2014 Panel Meeting Minutes**

The minutes and actions from the 2014 meeting were tabled and reviewed by the Panel.

***Actions***

- MPI to re-send to Keith Lassey the report on indirect sources of $N_2O$ emissions by Tim Clough and Frank Kelliher.
- Jim Fick to try to obtain Keith Betteridge's data. (It had been noted in the 2014 minutes in the notes relating to Paper 1: Hill Country – Direct $N_2O$ from Excreta ($EF_3$) that it would be good to obtain this data). Jim should contact Harry Clark to get advice on who to contact to request this data. It was mentioned that Keith did publish a paper, but there may be unpublished data.
- Jim Fick and Mike Rollo to check that the following action from 2014 had been carried out: MPI to obtain from Bown et al. a revision of Table 12 based on New Zealand species, and then submit this to the Panel for approval at a later date.
- Harry Clark still needs to complete the following action from 2014: Dr Harry Clark to send MPI some data relating to ash in order for MPI to send this out to the Panel. It was mentioned that the data is on the ash content of faecal material in anaerobic ponds, and that Garry Waghorn has this data.
- Andrea Brandon and Jim Fick to clarify what MfE and MPI are reporting on in relation to agriculture and forestry, including peat areas. (This action arose during the review of the part of the minutes relating to reporting emissions from tussock burning).
- Frank Kelliher to provide to MPI the details for a paper related to the decrease of the emission factor for indirect emissions of $N_2O$ from leaching and run-off from 0.025 (kg $N/kgN_{leached}$) (1996 guidelines) to 0.0075 (kg $N/kgN_{leached}$) (IPCC 2006 guidelines).
- MPI to then include the paper details provided by Frank Kelliher in the 2014 Panel Meeting minutes in paragraph three (the paragraph beginning with 'As previously noted the emission factor for indirect emissions …') on p. 7.
- MPI to make a change to the first bullet point under 'General Comments' on p. 7 in the 2014 Panel Meeting minutes. The new wording of the first bullet point should be: 'Simon Wear indicated that he would like to keep the equations from the CSIRO (1990) report pending an assessment of the CSIRO (2007) equations.' The second bullet point should remain as it is.
- MPI to liaise with Mike and Harry on reviewing the 2007 v 1990 CSIRO equations and then bring back that information to the Panel for comments. The relevance to New Zealand and the magnitude of the change should be considered.
- MPI to make a change to the second bullet point under 'Other Matters' on p.7 in the 2014 Panel Meeting minutes. The sentence 'He will ask her to pull tougher the data on the dairy trials' is to be changed to 'He will ask her to pull together the data on the dairy and sheep trials'.
- MPI to provide the Panel members with a copy of what is sent to the DGG each year, showing what changes have been made.

***Decision***

Apart from the three requested changes outlined above, the Panel accepted the minutes from the last meeting as a true and correct record.

Peter Ettema mentioned the following changes in staffing in the Resource Information and Analysis team at MPI: Simon Wear had gone to work in Bonn, Nicki Stevens had left MPI, Peter Ettema has a new role within a different team at MPI, Jim Fick had begun work in the ghg inventory team, and recently Alice Ryan and Joel Gibbs have also joined the team.

**Panel Paper: Hill Country – Direct $N_2O$ from Excreta ($EF_3$)**

The Panel discussed Dr Misselbrook's review.

***Decision***

It was decided that although Gerald Rys and Frank Kelliher would be able to participate in the discussion on this item, they would not be able to participate in the decision-making process for this item. This is because Dr Misselbrook's review considered the Kelliher et al. (2014) paper of which Gerald and Frank are both authors. [I know this is the reason why this decision was made in relation to Frank am I am assuming that this was the case for Gerald too – I just didn't explicitly note that in my notes].

The Chair drew attention to the section of the review entitled 'Is the proposed change scientifically defensible?' The general view of the Panel was that the proposed revised values for $EF_3$ by species met the threshold, but that more data was needed over time.

Comments on the review included:

- The relationship between Olsen P and emission factors is quite strong and this supports the slope categorisation.
- Surinder Saggar's paper made no reference to Chris Hunt's report for MAF in 2003. This was something to think about in terms of getting better data.
- Keith Betteridge's methodology and reports were extra data that could also be looked at.
- In the section entitled 'Is the proposed methodology, EF or variable consistent with IPCC GPG?' the following statement had been made: 'A conservative approach has been taken e.g. in the selection of the higher values for slope EF and the use of beef rather than sheep as a proxy for deer.' It was considered that a conservative approach was not the best approach for an inventory. A conservative approach does not meet the IPCC inventory requirements to neither over or underestimate greenhouse gas estimates.
- Based on volume of urine, do you say that beef has been used as a proxy for deer rather than sheep? Another option is that you choose a synthetic value. Or you do not change the current value (?) because of no data.
- Some deer are getting dairy pasture and some are getting sheep and beef pasture.
- Agricultural reviewers would be happy with this conservative approach as it is linked to peer-reviewed publications.
- The absence of information on the level of uncertainty was the biggest concern. A sensitivity analysis would be useful and a recommendation could be made that a sensitivity analysis be carried out.
- The parameters for a sensitivity analysis could be based on the curve in Surinder Saggar's paper.

- The parameters could be: slope classes, number of animals, distribution of dung and urine, and emission factors.

The Panel then discussed the panel paper. Comments included:

- Why is there not a split according to slope for dairy?
- Is activity data held showing that sheep are grazing in lowland?
- Beef + Lamb chose to present the data in three slope classes.
- The values for lowland and hill country/low slope are a single data set.
- Should the inventory only have two slope classes i.e. should lowland and hill country/low slope be combined?
- The data in Table 2 is from about three years ago, so there could be new data available that could enable this table to be re-done.
- It would be straightforward to have two slope classes.
- As no steep data is held, why would you have a steep category in the inventory?
- A recommendation could be that the meta-analysis for sheep is re-run, but that beef is fine.
- Could you use a figure for sheep dung that is independent of slope?

The meeting closed at 12.22pm for lunch and recommenced at 12.58pm.

It was mentioned that the 'deer issue' needed to be resolved. Conservative values should not be used, as by definition that is overestimating.

***Decision***

The Panel's view was:

1. It agreed in principle to the approach to split by animal class and slope class.

2. Given the availability of data, only two slope classes should be used: less than 12 and greater than 12.

3. The data for dairy, beef and sheep should be re-analysed for two slope classes.

4. More consideration should be given to how deer emission factors are created, as a conservative approach is incorrect for an inventory.

5. It accepted that in a number of situations there is not much data and recommended that more data be collected for the hill country.

6. A sensitivity analysis should be carried out on the results to assess known uncertainties and assumptions.

The Panel discussed how to deal with deer further. Comments included:

- If you aligned deer with sheep you would still have the full complement of information.
- Mike Rollo was not sure if differential factors for dung and urine were being used for deer.
- 90% of deer are on hill country.
- The default for deer would make it implausibly high.

- Is it not correct that we do not have the proportion of nitrogen excreted that goes into dung and what goes into urine for deer?

***Decision***

The Panel's view was:

1. Deer urine emission factors should be interpolated based on live weight and based on the emissions factors between sheep and dairy cattle.

2. MPI should develop a proposal for the deer dung emission factor.

***Action***

- Frank Kelliher to investigate whether a re-analysis with two slopes (less than 12 and greater than 12) can be done. Any revised analysis could be considered by the Panel via email.

A discussion was then held about the timeframes for doing the re-analysis and getting this included in the inventory. It was mentioned that New Zealand was not told to improve the slope class categorisation. The Panel determined that it would like this work done as soon as practical so it can be reviewed by email.

**Reviewing points 13, 14 and 21 in the Terms of Reference for the Agricultural Inventory Advisory Panel. Panel clarifying: the role of the Panel in terms of what they rule on, publication requirements on science/research to be incorporated into the inventory, and the use of alternative sources of activity data in the inventory.**

***Action***

- MPI to make the following changes to the Terms of Reference for the Agricultural Inventory Advisory Panel:
  - Delete point 13 as it is unhelpful
  - With regard to Point 14: Remove the words 'as they are not based on scientific research'. Also remove the word 'internationally'. Replace the words 'These will generally be' with 'For example,'.
  - With regards to point 21: After 'Are there any concerns with the methodologies used?' add in 'For example, consistency with IPCC guidelines.'
  - Points 21 and 22 are to be moved to go between points 11 and 12.
  - In point 18 the typo 'finial' needs to be changed to 'final'. Also in this point, 'in September of each year' needs to be replaced with 'in a timely manner'.
  - Throughout the terms of reference 'DDG (Policy)' needs to be changed to 'DDG (Policy & Trade)'.
  - Replace the word 'rule' throughout the terms of reference with 'advise' or 'make recommendations on'.

***Decision***

The principle should be that the Panel encourages as much of the approved inventory work as possible to go into international publications.

**Annual UNFCCC/Kyoto inventory review outcomes**

The Panel looked at the document entitled 'Review of the 2015 greenhouse gas inventory submission of New Zealand'.

**Research Procurement scheduled for the 2015/2016 financial year**

A document with the above heading was tabled and looked at by the Panel.

In relation to the ME and N content of pasture content project, it was mentioned that Harold Henderson at AgResearch could be approached for names of other statisticians. Dona Giltrap was a possibility. Someone working in the fishing area, a LULUCF person, or Stephen McNeill from Landcare could be helpful, as could Peter Thomson from Stat Solutions.

***Action***

- Keith Lassey to provide Alice Ryan with Peter Thomson's contact details.

A question was asked about why the partitioning of excreta into urine and dung was not in the list of projects., It was mentioned that this is in the second round of projects. The background for the partitioning project is in the minutes of the 2013 Panel meeting.

The meeting closed at 2.25pm.